

PATENT COOPERATION TREATY



From the INTERNATIONAL SEARCHING AUTHORITY

PCT

INVITATION TO PAY ADDITIONAL FEES

(PCT Article 17(3)(a) and Rule 40.1)

To:
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Date of mailing (day/month/year)	27/12/2004
PAYMENT DUE	within 45 MONTHS /days from the above date of mailing
International filing date (day/month/year)	15/06/2004

Applicant's or agent's file reference
P34709 - PO

International application No.
PCT/JP2004/008704

Applicant

MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.

1. This International Searching Authority

- (i) considers that there are 3 (number of) inventions claimed in the international application covered by the claims indicated ~~XXXX~~ on the extra sheet:

and it considers that the international application does not comply with the requirements of unity of invention (Rules 13.1, 13.2 and 13.3) for the reasons indicated ~~XXXX~~ on the extra sheet:

- (ii) ☒ has carried out a partial international search (see Annex) ☐ will establish the international search report on those parts of the international application which relate to the invention first mentioned in claims Nos.:

see annex

- (iii) will establish the international search report on the other parts of the international application only if, and to the extent to which, additional fees are paid

2. The applicant is hereby invited, within the time limit indicated above, to pay the amount indicated below:

EUR 1.550,00	x	<u>2</u>	=	EUR 3.100,00
Fee per additional invention		number of additional inventions		total amount of additional fees

Or, _____ x _____ = _____

The applicant is informed that, according to Rule 40.2(c), the payment of any additional fee may be made under protest, i.e., a reasoned statement to the effect that the international application complies with the requirement of unity of invention or that the amount of the required additional fee is excessive.

3. ☐ Claim(s) Nos. _____ have been found to be unsearchable under Article 17(2)(b) because of defects under Article 17(2)(a) and therefore have not been included with any invention.

Name and mailing address of the International Searching Authority
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Important Information for Applicants outside Europe

general

- the **claims cannot be changed** at this point in the procedure, the transmitted report is **not** the ISR (see PCT Art. 19)
- non-payment does not lead to a **loss of rights**, a new procedure will be started on entry into the regional or national phase
- any payments have to be effected **directly** to this ISA (account details below), payments to other entities will not be accepted
- in case of a **total of more than 2 inventions** found: when paying please **specify exactly** which claims should be searched
- an **extension of the set time limit** cannot be granted, as the total number of days **must not exceed 45 days** (PCT Rule 40.3)

payment by cheque or money transfer:

- the **date of payment** is considered to be the **date the money is booked** in the EPO account
- faxed cheques are not considered to be a valid payment
- only payments in EUR are accepted, no equivalents in other currencies
- payments by **credit card** are **not possible**

payment by deposit account:

- the **date of payment** is considered to be the date that the **authorisation** to deduct fees from the deposit account is **received at the EPO**

payments under protest according to Rule 40 PCT:

- the protest will **not be accepted without a payment** of additional search fee(s)
- the protest has to be **accompanied by a technical reasoning**
- no **protest fee** needs to be paid yet, only additional **search fee(s)**

Account Details

Euro accounts of the European Patent Organisation

N° 3 338 800 00 (BLZ 700 800 00)
Dresdner Bank
Promenadeplatz 7
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This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-5,12-33

Digital broadcast receiver. Determination of the AGC delay point

2. claims: 6-8

Digital broadcast receiver. Estimation of the strength of signals in adjacent channels

3. claims: 9-11

Digital broadcast receiver. Judgment of the contribution of distortion signals to the carrier-to-noise ratio.

The subject-matter of independent claim 1 is already not inventive (see the grounds for this objection). The requisite unity of invention (Rule 13.1 PCT) therefore no longer exists inasmuch as a technical relationship involving one or more of the same or corresponding special technical features in the sense of Rule 13.2 PCT does not exist between the subject-matter of the following groups of dependent claims :

Claims 2 to 5, 12 to 33 directed to the determination of the AGC delay point.

Claims 6 to 8 directed to the estimation of the strength of signals in adjacent channels.

Claims 9 to 11 directed to judging the contribution of distortion signals to the carrier-to-noise ratio.

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows :

The document US 5,999,559 discloses (the references in parentheses applying to this document) :

a digital broadcast receiver (abstract, figure 3) comprising :

a tuner (figure 3, ref. 3 to 9) which amplifies an input signal to select a RF signal on a desired band and amplifies the RF signal to frequency-convert the RF signal into an IF signal;

an orthogonal detector (figure 3, ref. 10) which calculates I and Q complex signals from the IF signal of said tuner;

a demodulator (figure 3, ref. 12) which demodulates a digital signal from the I and Q complex signals of said orthogonal detector; and

an automatic gain controller (figure 3, ref. 16) which detects the signal level of the I and Q signals, detects a demodulation state (figure 3, ref. S19) in said demodulator, judges a level of an influence from interfering waves (figure 3, ref. 14; column 6, line 62, to column 7, line 2) affecting on a demodulation signal on the desired band, generates a gain control signal on an RF band (figure 3, ref. S21) and a gain control signal on an IF band (figure 3, ref. S22) in accordance with the level of the influence (column 8, lines 25 to 43) and the signal level of said I and Q signals (column 5, lines 26 to 29), and feeds back both gain control signals to said tuner (page 4, lines 25 to 32; page 6, lines 46 to 48).

The subject-matter of claim 1 therefore differs from this known digital broadcast receiver in that the signal level is measured on the IF signal where in the US document the measurement is done on the I and Q signals.

As disclosed in this US document (column 5, lines 26 to 29), a function of the controller is maintaining the received base-band levels (I and Q levels) constant at the input of the demodulator.

It is however generally known to the person skilled in the art that the IF signal level measured at the input of the quadrature demodulator is proportional to the I and Q signal levels.

As shown in numerous prior art documents, the IF signal level at the orthogonal detector input may be calculated, according to circumstances, either directly from the IF signal, or from the I/Q components, or from the demodulated signal. For example in EP 0814 568 A1 the detection is performed on the demodulated signals (figure 1, ref. 129; page 4, lines 31 and 32), and in WO 01/06777 this detection is done on the IF signal (figure 1).

It would therefore be self obvious to a skilled person to consider replacing the signal level measurement of the US patent by the signal level measurement of the WO application where circumstances make it desirable.

As a consequence, claim 1 lacks an inventive step.

When read in the light of figure 7, the additional subject-matter of claim 2 differs from the disclosure of the US patent in that the FFT analyser is included in the demodulator.

A digital receiver according to this US document is suitable for receiving many modulation schemes, including OFDM. It is well known to the skilled person to use FFT for demodulating the I and Q signals (for example D5, abstract, figure 1).

In such a configuration, it would be self evident to a skilled person to benefit from the signal at the output of the demodulator FFT for analysing the signal.

The subject-matter of claim 2 therefore lacks an inventive step.

The subject-matter of claim 3 defined in the first two paragraphs of page 56 is known from the US patent (column 7, line 56, to column 8, line 4).

It follows from paragraphs 1 and 2 above that the features of claim 3 which make a contribution over the prior art of this US document and can be considered as special technical features within the meaning of Rule 13.2 PCT are defined in the last two paragraphs:

- a- a memory block for storing a signal
- b- modification means for changing a delay point
- c- comparison means for comparing the stored signal with the current signal
- d- judging means for judging the setting of the delay point according to the result of the comparison.

The general problem solved by the special features of claim 3 of judging the level of influence from interference signals in adjacent channels on the desired band being known from the US patent document (see above), and in the light of the description from page 19, line 22, to page 20, line 18, the problem solved by these special technical features can be construed as optimizing the AGC delay point.

Similarly, it follows from the discussion concerning claim 1 above that the following features of claim 6 make a contribution over the prior art and can be considered as special technical features within the meaning of Rule 13.2 PCT :

- a- a time axis filter which extracts a signal on the desired band from the I and Q signals;
- b- a detection level calculator which calculates the signal level at an output of the said filter;
- c- the judgment of the level of influence from interference signals in adjacent channels on the desired band is deduced from the calculated signal level and from the IF signal level.

The general problem solved by the special features of claim 6 of judging the level of influence from interference signals in adjacent channels on the desired band being known from the US patent (see above), the problem solved by these special technical features can therefore be construed as estimating the strength of signals in adjacent channels.

The following features of claim 9 make a contribution over the prior art and can be considered as special technical features within the meaning of Rule 13.2 PCT :

a- a C/N detector

b- the judgment of the level of influence from interference signals in adjacent channels on the desired band is deduced from the detected C/N and from the IF signal level.

The problem solved by these special technical features can therefore be construed as estimating the contribution of distortion signals to the C/N ratio.

Consequently, neither the objective problem underlying the subjects of the claimed inventions, nor their solutions defined by the special technical features allow for a relationship to be established between the said inventions, which involves a single general inventive concept.

In conclusion, the groups of claims are not linked by common or corresponding special technical features and define three different inventions not linked by a single general inventive concept. The application, hence does not meet the requirements of unity of invention as defined in Rules 13.1 and 13.2 PCT.

**Annex to Form PCT/ISA/206
COMMUNICATION RELATING TO THE RESULTS
OF THE PARTIAL INTERNATIONAL SEARCH**

International Application No
PCT/JP2004/008704

1. The present communication is an Annex to the invitation to pay additional fees (Form PCT/ISA/206). It shows the results of the international search established on the parts of the international application which relate to the invention first mentioned in claims Nos.:

see 'Invitation to pay additional fees'
2. This communication is not the international search report which will be established according to Article 18 and Rule 43.
3. If the applicant does not pay any additional search fees, the information appearing in this communication will be considered as the result of the international search and will be included as such in the international search report.
4. If the applicant pays additional fees, the international search report will contain both the information appearing in this communication and the results of the international search on other parts of the international application for which such fees will have been paid.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 999 559 A (TAKAKI) 7 December 1999 (1999-12-07)	1,2
Y	column 1, line 13 - line 24 column 5, line 26 - line 31 column 6, line 38 - column 8, line 4 figures 3,4,6	3-5
X	GB 2 348 328 A (TOSHIBA) 27 September 2000 (2000-09-27) cited in the application figure 7	1,12-17, 20-23
Y	page 48, line 5 - page 50, line 25	3-5
X	EP 0 814 568 A (LUCENT TECHNOLOGIES) 29 December 1997 (1997-12-29) page 3, line 34 - page 4, line 32 page 5, line 38 - line 50 page 6, line 14 - line 48 figure 1	1,2
A	WO 01/06777 A (THOMSON LICENSING) 25 January 2001 (2001-01-25) page 3, line 24 - page 5, line 3 page 6, line 3 - line 23	1
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

**Annex to Form PCT/ISA/206
COMMUNICATION RELATING TO THE RESULTS
OF THE PARTIAL INTERNATIONAL SEARCH**

International Application No
PCT/JP2004/008704

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>US 2002/131533 A1 (KOIZUMI) 19 September 2002 (2002-09-19) abstract; figure 15 page 1, paragraphs '0003! and '0004! page 3, paragraph '0045! page 4, paragraph '0066! - page 5, paragraph '0074! page 10, paragraph '0135! - page 11, paragraph '0143!</p> <p align="center">-----</p>	1
A	<p>EP 1 067 698 A (MANNESMANN VDO) 10 January 2001 (2001-01-10) column 2, line 23 - line 43 column 4, line 10 - line 25 column 5, line 23 - column 6, line 52</p> <p align="center">-----</p>	1
A	<p>WO 99/56424 A (DAEWOO ELECTRONICS) 4 November 1999 (1999-11-04) abstract; figure 1</p> <p align="center">-----</p>	2

Patent Family Annex
Information on patent family members

International Application No
PCT/JP2004/008704

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5999559	A	07-12-1999	JP 3137181 B2	19-02-2001
			JP 11017566 A	22-01-1999
			AU 736578 B2	02-08-2001
			AU 7314598 A	24-12-1998
			GB 2326783 A ,B	30-12-1998
			KR 273492 B1	15-12-2000
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			JP 2000312235 A	07-11-2000
			US 6771719 B1	03-08-2004
EP 0814568	A	29-12-1997	US 5907798 A	25-05-1999
			EP 0814568 A1	29-12-1997
WO 0106777	A	25-01-2001	AU 6212600 A	05-02-2001
			CN 1361984 T	31-07-2002
			DE 60005363 D1	23-10-2003
			DE 60005363 T2	01-07-2004
			EP 1197080 A1	17-04-2002
			ES 2202152 T3	01-04-2004
			JP 2004506344 T	26-02-2004
			MX PA02000557 A	02-07-2002
			TW 480883 B	21-03-2002
			WO 0106777 A1	25-01-2001
US 2002131533	A1	19-09-2002	JP 2002280852 A	27-09-2002
EP 1067698	A	10-01-2001	EP 1067698 A1	10-01-2001
			JP 2001044862 A	16-02-2001
WO 9956424	A	04-11-1999	EP 1070400 A1	24-01-2001
			JP 2002513242 T	08-05-2002
			WO 9956424 A1	04-11-1999
			US 6470030 B1	22-10-2002